# AMERICAN BEE JOURNAL.

EDITED AND PUBLISHED BY SAMUEL WAGNER, WASHINGTON, D. C.

AT TWO DOLLARS PER ANNUM, PAYABLE IN ADVANCE.

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[From the German of F. W. Vogel.]

## Practical Bee-Culture.

### AFTERSWARMS.

Second or afterswarms may be expected when *teeting*, commonly called *piping*, and *quawking* are heard in a hive from which a prime swarm has issued. The latter of these sounds proceeds from mature young queens kept confined within their cells either by constraint of the workers or from fear of the queen already at large in the hive. The teeting proceeds from this young queen already emerged after the departure of the first or prime swarm, and is uttered in reply to the querulous cry of one still kept in durance by force or fear. Not unfrequently such calls and responses continue to be heard in a hive during several successive days, even when the weather seems to be highly propitious for emigration, and still no swarm departs.

While an afterswarm is issuing, the young queen occasionally makes her appearance among the earliest emigrants, though she usually does not come forth till a considerable portion of the swarming party is already on the wing. She rarely delays her departure, however, till half the bees are out, nor till towards the close of the exodus. In most cases she shows herself repeatedly on the alighting board, but again retreats into the hive, finally re-appearing and taking wing, to accompany the swarm. Yet, it sometimes also happens that, whether from sheer wilfulness, or from some other cause, she ultimately remains in the hive, after having thus shown herself, and the swarm fails to issue. The bees then already out are apt to settle in small clusters in two or three different places—speedily, however, becoming aware of their queenless condition, and gradually returning to the parent hive.

Though an afterswarm issues to-day, if the swarming impulse continues to prevail, the parent stock will not send forth another to-morrow, though it may probably do so on the third day, for the young queen will usually remain at least one day at large in the hive after leaving the royal cell. Second, third, and subsequent swarms, not unusually contain two, three, and at times a still larger number of young queens, each—a circumstance easy to be accounted for. When a second or subsequent swarm is sent out, the young queens still in their cells are usually quite mature and full fledged; and several of them avail themselves of the opportunity to emerge during the bustle, and accompany the departing swarm. An afterswarm that has several queens will generally cluster in the usual manner in one place; but occasionally it will subdivide and settle in two or more liliputian clusters. In a short time, however, the bees of the smaller of these clusters will leave and join the larger one, which contains the first-hatched queen, that had emerged and mingled with the workers for some time before the departure of the swarm, and accompanied the first-issuing party.

When the swarming impulse has subsided, the bees allow the emerged queen remaining with them to destroy all the queen cells yet existing in the hive, or will extirpate the royal brood themselves, by dragging the nymphs from their cells, and casting them out. Usually this work of destruction is begun on the day when the second swarm has issued; but if a dead queen be found in front of a hive in which teeting *and quawking* is still heard, it may not be regarded as certain evidence that the colony has abandoned all inclination to swarm; for the queen thus found may be one that issued unobserved from her cell and was afterwards encountered and killed by her accepted rival. Usually, however, the workers destroy the supernumerary queens reared in a hive in preparation for swarming.

All bee-keepers residing in poor honey districts concur in the opinion that after-swarms, especially in unfavorable seasons, are ruinous to bee-culture; and that even in ordinary seasons, they deprive us of all chance of obtaining any surplus honey. The parent stocks commonly devote some eight or ten days to this matter of sending out after-swarms, during which period many precious hours are wasted, and honey gathering largely neglected, inasmuch as the swarming impulse does, for the time, to a large degree control or suppress the passion for gathering honey and accumulating stores. Instead of roaming the fields and exploring the

blossoms in quest of coveted sweets, many of the workers loiter at home idle, well gorged with honey, awaiting in vain the forthcoming of a swarm. Besides, by repeatedly sending forth after-swarms, the parent stock becomes so greatly depopulated, as to be unable to appropriate properly the supplies yielded by the surrounding districts, abundant though these may be for a brief period. Not unfrequently, too, this reiterated swarming results in leaving the old colony queenless—an event always disadvantageous and sometimes disastrous. After-swarms, moreover, are commonly so weak that if set up as independent colonies, they fail to fill their hives with combs, and are unable to lay up stores sufficient for their wants in the ensuing winter.

Efforts have been made to overcome the disadvantages arising from repeated afterswarming, by uniting several small swarms so as to form one pretty strong stock. But this can scarcely be regarded as a rational process; for what avails it to deal thus with afterswarms, if their production ruins the parent colony, or so greatly reduces it that it can yield no surplus? Prevention is here also better than cure; and for this reason we transpose parent stocks with the first swarms, after these have issued, in order to prevent after-swarming as much as possible.

We should resolve to content ourselves with prime swarms, and endeavor to suppress subsequent swarming. If a swarm has issued from a movable comb-hive, the queen cells remaining shou'd all be destroyed or removed, save one, on the sixth or seventh day. To destroy them earlier, as for instance on the second or third day, would simply be labor lost, for the workers still finding suitable brood at hand, would immediately start others; but if the removal be effected at the right time no afterswarming can take place. If the owner has not courage or leisure to open his hive and overhaul the combs in quest of queen cells, let him destroy as many on the second or third day as can be seen at a cursory glance, and immediately insert one containing an embryo queen so nearly mature that she will probably emerge in a day or two. When the queen thus introduced is hatched, all other queen cells in the hive will be promptly destroyed, and no swarm can issue.

In common cottage hives it is not an easy matter to destroy the supernumerary queen cells. Adding surplus honey boxes on the top or at the sides, or inserting an eke below, will not always prevent swarming; and when the impulse once gets possession of the bees, even decapitating drone brood or cutting it out, will not then always nullify their inclination to secede, as experience has often shown. There is, nevertheless, a process available, by which the production of these ruinous afterswarms can certainly be prevented, even in cottage hives. A temporary reduction of the population is an effectual counter-check, and enables the bee-keeper to accomplish his purpose. So soon as teeting and quawking is heard in a hive, remove it from its stand, turn it up and set an empty hive on it—winding a piece of muslin around the line of junction, so as to prevent bees from getting out. Then rap gently on the lower hive for about twelve minutes. The young queen being very agile, will speedily run up into the upper hive, and be followed by a large part of the workers. Now replace the old stock precisely in its former position, and you have it reduced to a non-swarming condition. But if the young queen were now removed from the swarm, and the bees allowed to return immediately to the parent stock, the work would prove to be labor in vain; for we should soon hear renewed teeting and quawking, and the driving out would have to be repeated. A different disposition must therefore be made of the driven swarm. It must be placed either close at the side, immediately in the rear, or directly on the top of the parent hive, and remain there till the following morning. By that time all the supernumerary queens and royal nymphs will have been destroyed and thrown out, the removal of so large a portion of the population having effectually quenched the disposition to swarm. The bees of the driven swarm will gradually desert their hive and return to their old quarters, le ving only a small number with the forsaken queen, which will also return home when she is finally taken from them. This process is even less troublesome than the search for and removal of the queen in a populous movable comb hive.

But with all his care, a beginner may happen to get some of these undesired afterswarms. This, for instance, may be the case if unfavorable weather sets in after the parent stock and the first swarm have been transposed, in which case only comparatively few bees can leave the parent stock and join the swarm; or it may occur also, when it happens that the parent hive contains a large proportion of young bees, just hatched, and which have not yet flown out. Hence, it may be interesting to inquire, what shall the beginner do with afterswarms obtained thus contrary to his own desire?

In the first place, if such after-swarm has perchance united with a first swarm issuing at the same time from another hive, he should not undertake to separate them. The queen of the afterswarm will at once be killed, and the two swarms will unite in peace.

Secondly, if he has several populous and well-stored movable comb hives, and designs to stock several more of the same description, let him place the swarm in a nucleus hive of the same size of frames, give it two or three frames with capped brood, and one frame with sealed honey. Now set the nucleus where he designs the colony to remain permanently, and proceed to build up a stock by inserting brood combs from his populous colonies, and transferring to a larger hive as soon as this becomes necessary.

Thirdly, afterswarms may also be united with each other, and thus made to constitute one strong colony. To this end, dig a hole in the ground, eight or ten inches in diameter, and twelve inches deep. At dusk set over this hole the hive containing the bees you intend to unite; then lift it about six inches high and set it down again with a sudden jar, that the bees may drop into the hole, taking care that the edge of the hive touch the ground equally all

around, so that no bees may escape. At the same instant rap smartly on the top of the hive with the palm of your hand, to dislodge and throw down any bees that may be adhering inside. Now lift the hive quickly, set it aside, and substitute for it the one containing the swarm to which the bees stricken down are to be united. Set this gently over the hole. The entrance must be closed, of course, and the bees must be prevented from crawling out from under it, either by surrounding its edges with a strip of muslin, or by heaping up ground around it below. The bees will then unite peacefully, and when all have become quiet, the hive may be placed on its stand;—though I prefer opening the entrance an hour or two after the union, and letting the hive remain over the hole till the next morning, so that any casual stragglers may have an opportunity to join the main body during the night. It need not be feared that both queens will be killed or mutilated in this operation. The queen of the lower party will, on ascending, be seized as a stranger by the bees of the upper hive, and immediately destroyed.

A beginner might suppose it preferable to invert the hive containing the swarm to be united, and set thereon the one that is to receive them. But this process would generally result in a murderous conflict between the workers of the two swarms; if, indeed, the swarm in the lower hive do not refuse to ascend, because its queen, scenting a rival in the upper hive, obstinately adheres to the quarters in which she feels herself safe.

Again, an afterswarm may sometimes be used with great advantage to reinforce a colony which has become greatly depopulated by repeated or excessive swarming. If a colony in a movable comb hive is to be thus strengthened, the bees of the afterswarm should previously be stupefied with tobacco smoke or the fumes of nitrated rags, and the queens then removed. Next, sprinkle the bees with diluted honey, pour them into the vacant part of the hive, and replace the honey-board. They will soon revive, and be kindly accepted by the colony to which they are thus summarily introduced. It is best to employ this process in the evening, when the bees have ceased to work.

Finally, an afterswarm may be returned to its parent stock, and this is probably the best disposition that can be made of it. But this should not be done immediately, or another swarm would commonly issue on the third day. Hive the swarm, and place it either at the side, in the rear, or on the top of its parent hive; wait till the supernumerary queens and queen cells have been destroyed, and the disposition to swarm has subsided. Then search for and remove the queen, and let the bees rejoin the parent stock.

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Neither queens or drones ever consume raw pollen. Whatever they receive of that substance, is derived from the chyme or jelly with which they are fed by the workers; and it is thus that they are furnished with a nitrogenous pabulum.

[For the American Bee Journal.]

## Novice Once More.

Mr. Editor, and Readers of the Bee Journal, we trust that you have not come to the conclusion that Novice's enthusiasm had all abated, and that he had decided to remain a novice, with no aspiration for a higher title. Far from it, be assured!

To commence where we left off. Our bees wintered finely until the first of March, only having lost one stock, and that was on account of a piece of carelessness, which we would not have believed we could be guilty of, viz: leaving an empty frame in the middle of the hive. The bees consumed all the honey on one side, and were unable to get over. The frame was so placed, to induce them to fill it late in the season, and was forgotten.

The first week in March we had a sudden cold spell, the thermometer being ten or twelve degrees below zero. Thereupon we found three of last year's swarms dead, with plenty of honey and good upward ventilation, but not very plenty of bees, as many had been lost by clustering apart during the winter, as Mr. Langstroth said was sometimes the case, in an article sometime ago.

In the December number, we mentioned a light stock that was put in the cellar, because they made such a loud humming when the mercury went down below zero; and that they were quiet after that. Well, our cellar is so arranged as to keep an even temperature of about 40 degrees, and as we only gave them one frame of sealed honey early in December, (at which time they were almost entirely destitute), we had been in the habit of striking the hive nearly every day, expecting them to be out of honey long before spring. But to our surprise, they answered promptly every time until the middle of March, when we set them out, and were agreeably surprised to find not more than twenty dead bees on the bottom-board, though some others left out had lost two or three quarts; and still further, on taking out the frame of honey given them, we found what we would before have supposed to be an impossibility, viz: nearly all of it remaining. They must have lived *more than three months on less than three pounds of honey.* Is it not so that bees remain partially dormant, at about 40 degrees? By placing the ear against the hive in the cellar, scarcely a sound could be heard, unless the hive was jarred in some way.

We should like to add that they did correspondingly well since then; but they have not. In a few days after setting them out, we found them very few in numbers, and they are now the weakest swarm we have. They were quite light in the fall.

About the rye and oats this spring. Mr. Editor, it would have done you good to have seen them, in case you have never seen a similar sight. We had provided about a bushel and a-half, supposing that to be a plenty. But, as if remembering their last year's education, they opened up on it with astonishing vigor, and consumed nearly all of it on the first two or

three pleasant days. After the rye and oat meal was all gone, we gave them wheat flour, until our "better half" feared that the bees would "eat us out of house and home." They became seemingly almost demented, and would dive into the flour and burrow into it, until it seemed as though they themselves must lose their identity. They would fly towards us, and take it out of our hand, as we were carrying it out to them; and such an incessant jubilant humming as they kept up while about it, made one think that they could not be other than the happiest little scamps on the face of the earth. And the huge "little biscuits" (as our children term them) which they had deftly padded up on either leg, presented an appearance ludicrous in the extreme, as they scampered hurriedly into their hives. After the rain had wet down their precious meal and it had become baked over the top, they would not give it up, but tunnelled and burrowed under it, until you imagined they were not bees, but some liliputian wild animals burrowing in the ground. The Chicago tunnelling wasn't a comparison!

"But did all this meal really amount to any positive good?" some of the neighbors asked. Of course it did. Our bees have never before been in half so fine a condition. They have been fully prepared to take advantage, if the apple tree blossoms had drawn them out before the first of May; and Mr. Editor,—will you believe it?—we actually had a fine swarm from our best stock, last Tuesday. Just think of it, on the 19th of May, and the usual time for black bees to swarm about here has been, of late years, about the fourth of July. A swarm of bees in May here is something before unheard of. By the way, Mr. Editor, we must tell you about that swarm.

We had begun to think that that stock might swarm, they were getting so full, when our "better half" came to the store hurriedly to say that "the bees were swarming." Now, as we had clipped all the queens' wings last season, to prevent them from "going off," *a la* Giantess, we knew they could not well swarm without us; and under the excitement of the minute we caught our hat, and regardless of slippers and shirt sleeves, "tore" down street, for the scene of action. Notwithstanding the aforesaid slippers would persist in "coming off" whenever we allowed our "feelings" for a moment to get the better of us, we at last reached home in safety. Sure enough, the bees were in the air, and clustering all over the hive, on the ground, and round about, showing evident signs of something wrong somewhere. We searched all around unsuccessfully for the queen, and concluded she had crawled back into the hive. But, as *we* had got the swarming fever too, we decided we must have a swarm anyway, and accordingly commenced opening the hive to hunt out the queen for the purpose, and found her strangely in the upper part of the hive. As one of the holes in the honey-board was open, she had probably mistaken it for the place of exit. After putting her in a queen cage and suspending her among a few carpet rags nailed to a board hurriedly for the bees to cluster on, we commenced making them swarm over again, by shaking them from the frames near her, nearly all of them having by that time re-entered the hive. But it was "no go." They had concluded not to swarm, and would take no notice of the queen, but hastened back into the hive. A lady friend who was witnessing the operation, suggested that we should put the queen in the place of the hive, so that they could not help finding her. We decided to adopt the plan, and proceeded to plant the queen and carpet rags in the proper position. But as we had only succeeded in scattering over the ground for a rod or two a multitude of young bees who did not know which way to travel, we were probably a little excited ourselves, and in trying to push the strip of board firmly into the ground, it broke suddenly in two. In answer to a remark to our friend whether she was not afraid we would kill ourselves before we got through, she replied that she had more fear that we would kill all our bees, if we attempted to stand on our head among them in that fashion. So we took it more coolly and put the balance of the board in its proper place and had the supreme satisfaction of seeing that the queen was recognized, and then such a scampering as there was apparently by common consent in one direction. As the board was broken off, a dangling end of the carpet rag hung down just to the ground, which they seemed to decide upon as the readiest means of ascending to her majesty. Soon we had a living stream, as large as a man's arm, moving upward, and as the wind waved it to and fro, it was picturesque and amusing in the extreme. There we let them hang just like any swarm, until we got a hive ready, with a frame of brood, and they were hived and have remained just like any natural swarm. The bees remaining on the combs were sufficient for the parent stock, and both are doing finely.

Now, would not the above plan answer at any time, by causing the bees to cluster about their queen set in the place of their old hive, and then moving them to a new location and hiving them? Or would too many of them go back to the old hive?

Mr. Editor, we have got a machine for removing honey from the comb, too. Others, according to the description we saw, were all made of wood. We thought tin would be nicer, and so had a tin can made, about two feet high, and eighteen inches across; made the frame for holding the wire-cloth of galvanized wire such as is used for the white wire clothes lines. As we use both the American and the Langstroth hives, we made it to accommodate both. It works to a charm. We have had some labels printed for our self-sealing fruit jars, of which we send you a sample. You can give it to your readers, if you think it worth while. The blank is left so that we can fill it up with the kind of blossoms from which the honey was gathered. For instance, we have honey from cherry blossoms, apple blossoms, raspberry, locust, white clover, &c., &c. The idea seems to please here. We find no trouble in getting $1 each for quart jars holding three pounds, jar and all, and the different kinds of honey, as we have labeled them, are readily distinguisha-

ble. Why not remove the honey as fast as gathered, before it is sealed? We find the most tedious part of the operation is shaving off the caps of the cells. The honey is so nice to use, or to keep, that we feel as if we hardly wanted to use any more boxes.

Though this article is getting long, we will not postpone what we have to say about our long-neglected, but not forgotten, *Giantess*.

Well, we did get the bees down and into a hive, all nicely, notwithstanding doubtful and desponding surmises from a host of friends to the contrary. We intended to cut the bee tree in April, as a kind correspondent advised us to do, as the tree was quite too large to let the top down. But our business was such that we really could not get time to think of or look after them until the 25th of May. Then we got our transferring tools all ready, and started about five o'clock in the morning for the scene of operations. By the way, we begin to think ourselves quite an expert in transferring, notwithstanding our first ludicrous attempt. We have this spring transferred three heavy stocks from box hives, and have done them all in tip-top shape, and the bees are doing fully as well, if not better than before. We did one in forty minutes from the time of coming on the ground; all on the plan we gave last year—moving the old hive back, putting the new one in its place, cutting the comb out, and transferring just the same as you would from one frame hive to another, having plenty of thin pieces of pine with small tacks in each end, all ready to press down whenever wanted.

But we were on the way to the bee-tree, with bee-hive, strips, transferring-board, tin pan, &c., &c. It was a beautiful morning, a beautiful location, and after a beautiful ride, we planted our tools, while two beautiful choppers plied their axes to one of the most beautiful oak trees our wife's father possessed. Giantess was certainly very obliging, we may remark, to go two miles with her retinue and take up her abode on the property of our relative aforesaid. We directed the tree to be fallen, as per advice from the BEE JOURNAL, so as to strike a couple of small hickories to ease its fall; and we succeeded so well that we could take out almost every comb entire. After putting the brood nicely into the hive, we ran the bees in from a place near the opening where they had clustered, as convenient as we could have wished. But, Mr. Editor, there was one *leetle* trouble after all—*Giantess was not there!* In her stead we found a host of gigantic queen cells, and—what was stranger still—at least half a dozen open, with the lids attached as nice as could be! Of course the bees had swarmed, though the bee-hunter who found them for us, maintained that they could not possibly have swarmed, and still have such a host of bees as we had there. But he did not know Italians. They soon went to work, and actually drove the robbers away from the old tree and licked up the remnants and removed them to the new hive. So well had they (and *we*) fastened the combs in the frames, that we carried the hive home in the evening without a single accident; and next morning, on looking them over, we found, not *Giantess*, but four of her promising daughters, all in one hive, and on peaceable terms, as far as we could discover. Now, how is this to be explained? They had been together at least twenty-four hours, as we had put no queen cells whatever in the hive. We divided the swarm into four parts to preserve the queens, for whether hybrids or not, we should be glad to find another queen that could lay eggs and raise a colony at the rate that our lamented Giantess did. And, Mr. Editor, we hint it confidentially that we are going to hunt her up again if it is a possible thing; and if we find her, we shall not wait till the 25th of May next year before we go to work, though black bees do not swarm for a month later.

We would like all the readers of the BEE JOURNAL *en masse*, to take a look at a two-story Langstrorh hive of hybrids that we have filling frames for our honey-emptying machine; and if the teeming thousands there at work did not remind them that the novice of old was almost a novice now no longer, we should rest content to sign ourselves, for all time to come, simply NOVICE.

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[For the American Bee Journal.]

## Bee Management.

In an article headed "*Criticism*" in the April number of the BEE JOURNAL, by Mr. Quinby, he calls for information, &c.; and as I never did make any charge for any information that I could give, I do not propose to do so now in this case.

A number of years ago, I became acquainted with an old gentleman from Holland, whose name was Wellhuysen; and I obtained the best insight or instructions in bee-keeping from him that I did from any other source whatever, until I began using the movable comb hives. So I propose to give his method of managing bees, the kind of hives used, &c. The hive was made of willows wove basket fashion, plaistered inside and outside with a thick coat of cow manure, and covered on the outside with straw tied on with elm bark. The hive was small at the top, and increased in size down from eight inches to twelve inches in diameter. The portion twelve inches in diameter was about fourteen inches high. The entrance was a small hole on one side, about eight inches from the bottom. I used the hive some seven or eight years, to experiment with. The hive was kept plaistered up tight at the bottom. Now, put a very small swarm in such a hive, it being small at the top and warm, all the comb built would be worker comb, and all occupied by brood as fast as built; and as warmth is necessary for bees to work their wax, there was none lost or wasted. Then, as the swarm needed strengthening, he would drum out young bees from any hive that could spare them, thus strengthening up by degrees. In filling hives with comb, he used young queens; and having only bees enough to build comb as fast as the queen could occupy the cells with brood, every hive was filled with worker comb from top to bottom—except a few

with old queens, which were filled partly with worker and partly with drone comb. (He raised drones in the proportion of about five to the hundred.)

Strong stocks are the sheet anchor in bee-keeping; and all worker comb in the breeding apartment of the hive is the very foundation of that sheet anchor. Without it, it is impossible to keep strong stocks. Last July I was called to St. Charles, to assist a man and give him instructions in managing his bees. He had some twenty-five swarms, in chamber hives, with an inch-and-a-half hole on each side at the top of the lower apartment, covered with wire screening, and the hives raised on blocks at the bottom. Under each young swarm that was building combs, there was a large amount of wax wasted. Under some hives it would amount to a double handful. There was evidently wrong ventilation. Again, take a full frame from one of my swarms and insert an empty one in the centre for them to fill, and they will fill it without one particle of waste. But insert that frame at the side of the hive, and there will be some waste of wax. Again, when a swarm is filling boxes placed over them, there is no wax wasted. I saw a Kidder hive last summer, in which the bees were wasting wax while filling boxes. Each box had an inch hole communicating with a corresponding one in the outside cap. Here was too much ventilation. We must understand that most of the comb is built in the night, when the temperature is considerably cooler than it is in the day. Consequently the same ventilation that suits for the day will not answer for the night, if the wax is all to be saved. Every person knows that wax when cold is hard and brittle, and when warm enough is soft and pliant.

Mr. Wellhuysen's objections to lumber hives, as he called them, were that they are too cold for the development of brood, the saving of wax, and for wintering purposes; and I know that for increasing stocks his own hives would beat any hive I ever saw. I furthermore know that I manage to have my hives filled with combs without any waste of wax. The Miner hive was the worst hive I ever saw, for wasting wax. It had crossbars on top, sharpened to an edge on the underside, to prevent the bees from attaching the combs to anything else. There was a piece of cheap thin cotton-cloth spread over said bars, and the cap then put on. This, as he claimed, was to compel the bees to build all worker and straight comb. Thus it will be perceived that this piece of thin cloth allowed the heat to escape so much, that I really believe that they wasted as much wax as they used in filling the hive with combs. Now, if I had said to Mr. Gardner, in my letter to him published in the April number of the BEE JOURNAL, "you must ventilate all your hives the same as I ventilate my largest, or the same as I ventilate my smallest," (for I happened then to have a small one, though it was through my own carelessness or neglect,) and had given him no other directions, he might in either case have ruined his bees. In both winter and summer ventilation, a person must exercise a little discretion and judgment.

About that two-story bee-house, when I alter my opinion I will let you know by the first mail, postage free.

Now, Mr. Wellhuysen could, in his rudely constructed hives, keep all his swarms equally prosperous. I visited his apiary repeatedly, and when he had more than a hundred swarms, I turned up hive after hive and examined them, because he called my attention particularly to the fact that they were all equal in numbers and prosperity. The question with me was, why cannot I manage bees *in frame hives better than he can*, for in these everything is under our control? If a swarm has too much pollen, we can exchange with one that has not enough; if one has too much honey, and another has not enough, by a proper exchange both may be benefitted, &c. But the first foundation of this prosperity is, all worker comb in the breeding apartment; then keep no queen over two years old. Equalization must also be attended to in the summer; in the fall it will be too late. We must attend to this equalization *this* summer, and then we shall in the next, with artificial swarming, have everything under our control. We must never allow the bees to get in advance of the queen; for if we do, the prosperity of the swarm is checked at once; that is, if the bees are allowed to fill the combs with honey in the spring, before the queen has filled it with brood, the swarm will be an unprofitable one. Take a swarm that is nearly destitute of honey and feed it just right, that is so as to promote breeding early in the spring, and not to fill the comb with honey, such swarm will almost invariably be a prosperous one. On the other hand, allow a swarm that has honey enough for all purposes, to appropriate all the honey from one or two other hives early in the spring, and before they consume it, the willows produce honey, then the fruit trees, the white clover, &c. Such a swarm will dwindle down to nothing, because the queen has no place to deposit eggs for brood.

If from any cause the queen does not commence laying eggs as soon as she should in the spring, she must be stimulated, either by feeding or uncapping sealed honey in the hive, for whenever the bees are fed they feed the queen. Thus the rousing up of the bees and compelling them to fill themselves with honey, promotes breeding.—Taking bees from another hive and putting them in with a strange queen, causes them to feed her and pay more attention to her, especially if they are young bees. Bees taken from three or four different swarms, in sufficient numbers to make a good stock, and put in a hive with a queen, will work nearly as well again as the same number taken exclusively from one swarm, with their own queen. Drumming out a swarm and putting it back again in the same hive, sets the bees to feeding the queen. A person who has never tried the experiment of stimulating, and regularly giving the queen all the room she can occupy with brood throughout the season, will be astonished at the amount of bees that can be raised in one season from one queen.

The article from Mr. Dathe, in the April number of the BEE JOURNAL, is worth a careful reading by every reader of the JOURNAL. He arrives at the result of all worker comb in

the breeding apartment in one way. Messrs. Bidwell Bros., of St. Paul, Minnesota, arrived at the same result by reducing four hundred colonies to two hundred,—using all the worker comb and all the bees in two hives for one. They thus brought them in the right shape at once. My plan is to use young bees for filling hives; and I commence with a small quantity of bees, for a young queen does not come up to its full capacity at once. As brood increases, I increase the number of bees, yet not so as to have them store honey in the breeding cells. I always insert an empty frame for them to fill, between two that are filled with brood in the centre of the cluster. By so doing, when the hive is full of comb, every comb is soon occupied with brood; and all the eggs, instead of being laid on the outside of the cluster, are, where they should be, in the centre.

My old swarms, when once made up, are always kept strong. If I remove a comb, I always insert an empty frame between two filled with brood; and if there is a small quantity of drone comb in the hive, they almost invariably fill the empty frame with worker comb (for a natural swarm usually builds drone comb at the outside, and not in the centre.)

A swarm made up in the way I make them will be a profitable swarm. They never fail to be so with me. Suppose we make a swarm the way Mr. Quinby directs in his book. While the bees are raising a queen, they build drone comb, which he gets rid of by having it built in boxes. Well by the time the queen is ready to commence breeding, nearly all the old brood has hatched and the cells are filled with honey; and the old bees that were put in with the combs, are for the most part dead. Now the young bees commence filling the frames with worker comb; but those frames are at one side of the hive, and as there is some brood yet to hatch, it is there that the queen will be depositing eggs as fast as she has room; and there too the main cluster of bees will be. If they gather honey as fast as they usually do here, they will give the queen very little room. But suppose they fill the hive with comb and honey, there will not be over one third as many bees in such a swarm in the fall as there ought to be; and I could not warrant it to be a profitable hive the next season.

To sum up the whole—there must be all worker comb in the breeding apartment of a hive; and all swarms should be reinforced and made strong in the breeding season (not in the fall). Any person that follows the practice of having weak stocks to double up or strengthen in the fall with old bees, will be disappointed and dissatisfied—in other words, will find himself behind the times. So far as wintering bees is concerned, every swarm that is properly managed through the summer, can be wintered and come out in as good condition in the spring as it went in in the fall; and I can make thirty, forty, and even fifty dollars from the poorest stocks that I have had the management of during the previous season. The swarm of which I gave a description in the May number of the BEE JOURNAL, was the poorest one I had under my care the previous summer. I am taking swarms from my neighbors, making them into profitable stocks, and returning them for a reasonable compensation; and I warrant them, if managed as I direct. Some of these swarms had done nothing for three years previous to my taking them in charge. They gave neither swarms nor surplus honey. But this article is too long already, and I have not said one-half of what I could wish to say on the subject.

E. GALLUP.

OSAGE, IOWA.

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[For the American Bee Journal.]

## Transferring Bees.

It is frequently the case that bee-keepers wish to transfer a whole colony from one hive to another. If the comb has become old from long use, it may be best to change the colony to a new hive. If it is designed to introduce an improved hive, to supersede the old hive previously used, it is desirable to transfer the colonies in such manner as shall give them all the vigor of a new swarm, and secure a colony consisting of the greatest number of workers and the smallest number of drones. Probably about the time of the swarming season is the best time to transfer them.

The transfer has been made by driving the bees from one hive to another placed on the top of it; rapping upon the lower full hive, thus inducing the bees to retreat to the upper empty one. Another plan, adopted by some, is to place the full hive in an empty tub, with the empty hive on the top of it. Pour water in the tub gradually, to rise in the hive with bees, and thus drive them into the upper hive. Still another way is to cut out the comb, fasten it in movable comb frames, and place the frames in the empty hive.

The first is perhaps the oldest method, and may be considered as a rather tedious one. The second method destroys the honey in the comb, and is injurious, if not fatal to the unhatched brood. The third method changes the home of the bees, but retains the old comb. If the old comb is cut out of the hive and placed in movable comb frames, to transfer them to a new hive, this mode not only retains the old comb, but that comb is also in a less favorable position than the bees would place it themselves.

*Inquiry.* Would not the following plan be an improvement upon the preceding?

Wait for the issuing of a swarm. When they issue place them in a hive with box room for from 100 to 150 pounds of surplus honey. Remove the old hive and place the new one on its stand. Remove all the combs from the old hive; brush off the bees before the new hive on the old stand; and place all the worker brood in a small box in communication with the new hive. Throw the drone brood to the chickens, and dispose of or destroy the queen cells. By this method you secure two, and what would perhaps have been three colonies in one hive; and can hardly fail to secure surplus honey accordingly. You dispose of a large number of drones that otherwise would have consumed a portion of the surplus; and by disposing of the queen cells render swarming improbable

for the season. You have your bees transferred to your new hive, and if that has surplus honey boxes of the aggregate amount of 200 pounds, you will probably have all of them filled with surplus, if the season is a very favorable one.

If you have non-swarmer hives, by adopting this method you may control them, and limit the number of swarms to the capacity of your field.

JASPER HAZEN.

ALBANY, N. Y.

[For the American Bee Journal.]

## How to Ventilate, so as to Save all the Wax.

When hiving a young swarm we put in about six frames, one containing honey and brood, and five empty ones—varying this according to the size of the swarm. Then we adjust the division board, and place the rest of the empty frames on the other side. The division board fits close to the honey board and to the sides of the hive, and extends to within about three-eighths of an inch of the bottom. This leaves a space for the bees to pass under, the whole length of the division board. The entrance to the hive is in the bottom board, instead of being in the bottom of the hive. Suppose we put the bees in the right hand side of the hive. We move the hive to the right on the bottom board, and this will make the entrance into the vacant side, instead of into the side where the bees are. If the bees cannot all get into that side, they will cluster somewhat in the vacant side, and on the following day, when many are out to work, they will have room enough; and at night, when it is cool, they will all crowd into their own side. As soon as they need more room, place another frame on their side, and set it in the centre. When the young bees begin to hatch, two or three frames can be placed in at a time. Always put an empty frame between two full ones. You will soon perceive that there are other advantages, besides saving wax, by managing a swarm in this manner. The queen will occupy the entire comb with brood when the hive is full, or considerably more than she would under any other management that I have yet found out. Instead of commencing in the centre of the cluster, and extending her egg-laying for three weeks towards the outside, she can be depositing eggs all the time in the centre. She will consequently deposit nearly, if not quite double the number of eggs in the same length of time, that she would otherwise deposit.

I build up a weak swarm somewhat on this principle in the spring. But the bee-keeper has got to use some reasoning and judgment in these operations. It is almost impossible to give written instructions that can be followed to the letter.

The division board must be put in so that if it shrinks or swells, it will be enlarged or diminished up and down, or, as a correspondent writes to me, it may become immovable.

I had to puzzle my brains considerably to ventilate just right, so as to save all the wax; but now, it is no trouble at all. I can hit right every time, and the simple directions given in this article ought to enable any of those experienced bee-keepers who, as Mr. Quinby says, know all about that division board, to do so with a little practice and the right kind of hive.

If it takes twenty pounds of honey to produce one pound of wax (and we know that it takes quite a large quantity), and bees can be so managed as to save all that waste (as they certainly can be), it would amount to quite an item in an apiary of one hundred hives.

This has been a grand season for bees, so far, in this section of country. Since the 9th of March, up to the first of June, we had only twelve days on which the bees could not do something outside of the hive. Natural swarms commenced coming out, with us, on the 21st of May; the earliest I have ever known them to do so since I came west, twenty-one years ago.

ELISHA GALLUP.

OSAGE, IOWA.

## Another Bee-Flower.

A correspondent of the *Cottage Gardener* recommends the *Phacelia tanacetifolia*, or Tansy-leaved Phacelia, as an excellent bee-plant. He says—"It is a tolerably hardy annual, some seeds of which were brought into this country from California in the year 1832. Although but little cultivated, it is remarkable for its elegant foliage and fascicled spikes of violet flowers, which continue to blow during the greater part of the summer and autumn months, but chiefly in June, July, and August. It is easily raised from seed, which should be sown in the spring in ordinary garden ground. It requires no protection after the severe frosts are over. Besides being a great acquisition to apiarians and to amateur bee-keepers, on account of the special attraction of its numerous flowers for bees, it is highly ornamental, and deserves to be generally grown in flower gardens, and in the neighborhood of apiaries."

Dzierzon speaks highly of another species of this plant, the *Phacelia congesta*, the seed of which was sent to him by an enthusiastic Russian bee-keeper. He describes it as an annual of rapid growth, and flowering speedily even when sown in July on a pea patch, after the peas have been harvested. It is a large showy bush with leaves resembling those of the cypress, and blue flowers not unlike those of the *Echium vulgare*, or Viper's Bugloss, the famous Russian bee-plant, largely cultivated for bee-pasturage by Propokovitsch and others. In Silesia it continues to bloom till late in October, and is visited by bees after frost has cut off all other sources of supplies.

There are various other species of Phacelia found in the United States, east of the Rocky Mountains, from Lake Superior to the Gulf of Mexico; but whether any of them are of much importance as a honey-yielding plant, we do not know.

DRONES when expelled from their colony by the workers, are apt to repair, to some extent, to queenless stocks. This fact has occasionally given careful observers the first intimation of the queenless condition of a hive not previously suspected.

[For the American Bee Journal.]

## An Anecdote.

MR. EDITOR:—If you do not think the following worth publishing, just throw it in the waste paper basket; I shall not complain.

About six years ago, last winter, an agent engaged in selling a patent bee hive, came to my house. He had a model, made and finished off in the best workmanlike style. It was indeed a beautiful thing to look at. He very kindly showed me all its advantages, but none of its disadvantages. He said he had been a practical student of apiarian science for several years; that, after much research and experiment, he had invented the only hive known that was perfectly adapted to the wants and habits of bees. The Langstroth hive, he said, had some reputation, though it was nothing but a humbug. He told me that beeswax was *crystalized honey*, and how many pounds it took to make a pound of wax; and that the bees produced it by eating very plentifully of honey. He said a part of the bees worked on the cells as builders, another part labored in working up and preparing the wax as a mason works his mortar, and the other part acted as hod-carriers and delivered it to the builders. He then soared into the higher regions of apiarian science; said he had often seen the queen and the drone in the act of copulation; and could tell whether a queen was fertilized or not, as soon as he looked at her. He then gave me a minute description of the internal organs and functions of the queen, the drone, and the worker bee; and many other wonderful things which I do not now recollect.

I told him I had been keeping a few bees for a number of years, and though I had been trying to learn, I had only learned enough to know that there were many things in the internal economy of the bee hive that I did not know anything about. I then asked—how many legs has a bee? He answered *four*. How many wings? *Two*. Very well; there is one thing more that I wish to know, how does it happen that you know so much about bees, both scientifically and practically, and things too which no human eye can see, even with the aid of a microscope, and yet there are other things plainly visible to the naked eye, which you do not know? If I can see right a bee has six legs and four wings. This he would not believe or admit, till I procured a few bees and gave him ocular demonstration of the truth of my assertion. He then said I had a different breed of bees from any he had ever seen, and, judging by these numerous legs and wings, *they must be* a very superior race; and he thought that my superior race of bees and his superior hive would work wonders. Now, said I, my friend, you say that beeswax is crystallized honey. By parity of reasoning you would be bound to admit that *tallow* is *crystallized grass*, for every one knows that the ox by feeding plentifully *on grass* produces *tallow*. If you can demonstrate to me that tallow is crystallized grass, and tell us how many pounds of grass it takes to make a pound of tallow, I shall have more confidence in your scientific apiarian knowledge. He decamped immediately.

SPRINGFIELD, ILL. W. Y. SINGLETON.

[For the American Bee Journal.]

## To Supersede Black Queens.

Any one who, when trying to Italianize a stock, has had as much trouble to find the black queen as I have had, will be glad if some plan can be devised to avoid this tedious and often fruitless search.

To those using the movable comb hive, I would suggest the following method. Give two swarms a little tobacco smoke, to alarm them. Then take out the frames from those hives, and brush all the bees back into the hives. Now divide the combs containing honey and brood into three equal parts, and shake all the bees into one hive, giving them one-third of the combs. Place this doubled swarm on a new stand. Put the rest of the combs, equally divided, into two hives; set them on the old stands; and into each insert an Italian queen cell; or, as soon as the bees return in sufficient numbers to prevent a queen from leaving, give each hive an Italian queen, temporarily caged.

The doubled swarm will soon destroy one of the black queens.

When wishing to increase the number of swarms, I see no reason why this plan will not be safe and effective.

The bees will be too much alarmed to quarrel; but should they be so disposed, a little smoke will subdue them.

If you are afraid to risk a new and valuable queen, you can let the hives stand till all the eggs are past being converted into queens; then cut out all the queen cells and your Italian queen will be safe with them.

If not wishing to increase the number of your swarms, add the bees from a strong hive to those of a weak one, smoking both of them thoroughly in the process. Place the hive from which you have taken the bees, with the combs and brood in it, on the old stand; and in a few hours you will have a good swarm without a queen, unless you have already introduced one for them. The weak swarm will be strengthened by the young bees which will remain in their new quarters. L. C. WHITING.

EAST SAGINAW, MICH.

[For the American Bee Journal.]

## Hunting Wild Bees.

The following letter from Mr. Gallup, in reply to inquiries about searching for "bee-trees" in forests, has been communicated to us, and will doubtless interest such of our readers as reside in wooded districts, and are not familiar with this kind of "prospecting:"

MR. MERRILL:—Your letter is at hand, and in answer to your inquiries will say that I have had some experience in hunting bees. The old saying is that bees always go in a direct line to the tree; but that is not always so. They do not fly in a straight line against a strong head wind, but tack right and left, the same as a ship at sea with a head wind. In your case of find-

ing a swarm up the mountain, they tacked to the right and left, and so confused you. You should have got a strong line of bees coming to one spot, and trapped them in a box. Then moved directly up the mountain with them, and let them out slowly, waiting till they formed a line. If they still confused you, conclude that the tree is still higher up. Proceed again as before, and when you have got as high up as the tree, or higher, the bees will go in a direct line to the tree. When you judge that you are in its immediate vicinity, cross-line them. Where bees are hunted for in a thick woods, I find that cross-lining them is the quickest course to adopt. I will explain. Set your bait in an open spot in the woods, and get your line. Set some pickets or spot trees. Trap a lot of bees, and move a half or a quarter of a mile at right angles to the line. Find an open spot; liberate your bees; and as soon as you have obtained the line, set your pickets. Now sight both lines through to where they cross, and you are somewhere near the tree. But recollect that should there be a considerable hill between you and the tree when lining bees, they will fly around the hill instead of going over it, unless it is a long one. They will also frequently go round a heavy grove of tall timber, instead of going over it. I once found a swarm on the edge of the high bank of a stream. When I first started them, the bees went directly west, but when I found them they were directly north. They flew west until they struck the stream, which they then followed around a bend to the tree. In that case, I trapped a large quantity of bees; and just before sunset, I opened a hole large enough for one bee to come out at a time, and then started on a run on the line. (You can see a bee a long distance just at sunset). By one bee coming directly after another, I could follow them as well as I could a rope stretched from the box to the tree. Of course I left the box where I opened it. For scent to attract the bees, I build a fire, heat some stones, and put a piece of comb or beeswax between the hot stones—putting three or four drops of oil of anise on the wax or comb before burning it between the hot stones. Then have some good honey in the comb, if possible, for bait and drop one or two drops of the oil on that also. Burn your comb and have your bait away from the smoke of the fire. At any time when bees can fly out and cannot gather honey, they will come to you, if you are anywhere near them. The holes to those I have found have been facing all points of the compass—some one way, and some another.

Should there be anything that you do not understand, write, enclosing a stamp, and I will endeavor to explain.

ELISHA GALLUP.

OSAGE, IOWA.

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**It is an infallable sign of queenlessness when pollen-cells are found enlarged and transformed to incipient queen-cells. And when the surface of the pollen in the cells is very uniformly glazed over, as though varnished or covered with size, it may safely be concluded that there is no queen in the hive.**

[For the American Bee Journal.]

## Respiration of the Bee.

Man breathes through his nostrils or through his mouth, and by this process throws off, in an invisible form, a large proportion of the food which he eats. In the case of the bee the same ultimate is attained, although the passages by which this breathing is effected are very different and very differently situated. Instead of breathing through its mouth, the bee breathes through a series of holes or *spiracles* situated along its sides. That the products of respiration from these spiracles are nearly the same as from warm-blooded animals (so called), I have abundantly proved by experimental investigation. Carbonic acid and water are the chief if not the sole products.

The amount of carbonic acid evolved by a moderate sized swarm is not very easily determined experimentally; but it is not difficult to arrive at an estimate which will be comparatively correct, by considering the amount of food consumed, and its composition.

Honey consists of twelve equivalents each of carbon, hydrogen, and oxygen, (C 12, H 12, O 12). Twenty-five pounds of honey are simply fifteen pounds of water united to twenty pounds of carbon or charcoal. It will thus be easily seen that when honey is consumed, either for making wax or for sustaining life, very large quantities of carbonic acid and water are produced. When the carbon of the honey is burnt in the process of respiration, it forms carbonic acid. Respiration, or rather the processes connected with respiration, are as truly an act of combustion as is the burning of the fire on the hearth; and the resulting carbonic acid is as dangerous to the bees as the fumes of sulphur, unless it is mixed with a very large proportion of air. We confined a few bees in a glass jar, and then introduced a quantity of carbonic acid carefully washed from all impurities. In a very short time the bees were all dead. Now, as is stated in a recent article by Mr. Adair, this gas (carbonic acid) is very heavy, so heavy that it can be poured out of one vesssel into another, like a liquid. We have repeatedly dipped up a tumbler full of it out of a large jar, and then, by pouring the contents of this tumbler on a candle, have extinguished the latter. How then does it happen that the carbonic acid, arising from the respiration, does not collect in the lower part of the hive, or in the lower part of the atmosphere in general, and suffocate all the inhabitants? Mr. Adair states that it does so fall to the gronnd. But in that he is mistaken, as the upper regions of the atmosphere are actually richer in carbonic acid than those at the surface of the earth. This is due to causes not pertinent to our present subject. If the facts were as Mr. Adair states them, the greater part of the surface of the earth would be uninhabitable. The amount of carbonic acid existing in the atmosphere is sufficient to form a layer over the entire surface of the earth to the depth of over ten feet. No ocean would be navigable except by vessels whose decks were elevated above this ocean of fluid poison. Every valley would be filled as with an invisible lake, in which the

unsuspecting traveller would drown as certainly as if he stepped into a deep pool of water. From the mouth of every individual would proceed a stream of this invisible liquid, which would flow downward like a rivulet and collect in every hollow. The first sleep of the babe in its cradle, would be its last, for the exhalations of its own lungs would gather around its head and smother it. But all these results are avoided by the curious law known to chemists as the diffusion of the gases. By means of this law the poisonous gas produced by our breath is carried away from us, by a peculiar and special force of most wonderful power. Carbonic acid is not removed from the air of the hive by absorption, as Mr. Adair states. The comb has no power to absorb it; and if it had, it would not turn it black. Mr. Adair here confounds carbonic acid with carbon—two very different things. We have no reason to believe that carbonic acid is ever decomposed in the hive. The comb blackens by age and heat.

The agency of this curious law in the ventilation of the hive, must form the subject of a future article, as we see our space is exhausted.

J. P.

[For the American Bee Journal.]

## How to make Natural Swarms Artificially.

First: blow in a little smoke at the entrance of the hive; then take off the honey-board and blow in a little more smoke at the top. Use but little smoke at any time when operating with bees. Take your jack-knife and uncap a considerable number of the honey cells at the top of the frames. Now give five or six smart raps on the hive with a small stick. Blow a little more smoke on the bees at the top; replace the cap of the hive, and let them rest about five minutes; they will be filling themselves with honey in the meantime. Blow a little more smoke in at the entrance, and then, with a stick in each hand, commence rapping quite smartly on the sides of the hive. In about ten or fifteen minutes you will have the queen and a swarm of bees in the cap. Have another cap in readiness; lift off the one with the bees in gently and turn it over, and place the empty one on it, so as to prevent the bees from flying. Let them remain thus five or six minutes, while you are replacing the honey-board and adjusting the old hive. Now take your two caps and carry them five or six rods, to where you want your new swarm to stand. Take off the upper cap, turn it over, and set it up leaning against something convenient. Now take the other cap and shake all the bees out into the one that is leaning up, so as to have the bees there all together. Let them set for about forty minutes, while you are getting a hive ready for them. Then go back to the old hive and take out a frame that has considerable honey and some brood, and put it in the hive intended for your swarm; for it is bad policy to set the young folks to keeping house without some provision for supper or a rainy day, whether it be a natural or artificial swarm. At the end of your forty minutes your bees will be all clustered and quiet, provided they have a queen, You can now hive them the same as any natural swarm, and they will work precisely like one in every respect.

But this performance must be done about swarming time, and when the bees are gathering honey. After the first swarm you will have queen cells to give to the old stock. Introduce one the next day after taking out the swarm.

In box hives, smoke your bees, turn over the hive, and give it two or three sudden jars on the ground to start the nectar or unsealed honey out of the cells, and use boxes fitting the bottom of the hive instead of the caps.

In all cases the bees must be perfectly filled with honey. We prefer to leave the old stock on its old stand. Some recommend removing the old hive and setting the new one in its place. In that case you leave none of the old working force in the old stock.

If done just right and at the right time, it will be just as near natural swarming as any method can possibly be. If you hive them immediately after dividing, without letting them cluster, they will nearly all go back to their old stand.

Suppose you fail to get the queen the first time, why, try again. You are almost sure to get her the second time.

In hiving a swarm, I always make it a point to see the queen.

I practiced this method for years, and sometimes practice it even now; especially if the season is an early one.

ELISHA GALLUP.

OSAGE, IOWA.

[From The London Gardeners' Chronicle, March 24, 1868.]

## Disease among Bees.

The subject of bees and bee-keeping being frequently treated of in your columns, it may be of some importance to inquire into the causes and effects of a disease now prevailing in my own and some other apiaries. The first time it came under my own notice was four years ago, since which it has been increasing both among my own stocks and those of my neighbors. It appeared first with me in a strong stock in a new hive. About Christmas the bees began crawling out at the entrance, unable to fly; hundreds were dragged out by the living. They had a darkish appearance, and many seemed ready to burst. A clean new stand was given, in the hope of checking the mortality, but thousands of bees lay on the floor, some dead, others in a torpid state. They continued to die until May of that year, (1864).

In 1865. the bees of a hive well stocked with honey and bees, began to crawl out and were dragged out, as before. In 1866, I had four in the same condition. One, which stood many yards distant from the other diseased ones, was affected in a like manner, and died; and what to me appeared strange, was that in a short time, those hives on either side that stood nearest to this stock also died from the same cause, proving the infectious nature of the disease.

I have tried giving free ventilation to some, and keeping others more close; but there seemed to be no difference in the result. Another

remarkable thing was, that the hive last mentioned had, when a year old, sent out a large swarm, which I placed about three yards from its parent stock. Just at the time that the bees of the latter were dying off, those of the swarm began to die also.

This season, (1867-8), I have two stocks fast dying, and one more appearing to be affected. I have at the present time some old stocks which are quite healthy, as are also the swarms which have come from them. How can this be accounted for, these hives being kept under exactly similar conditions to the affected hives?

If no remedy can be found for the disease, I propose to destroy every stock in which it makes its appearance, sparing none, with the hope of destroying all traces of it.

R. MOWER.

[The disease which has attacked your apiary appears, from your description, to be a kind of dysentery, but somewhat allied to dropsy. We have known an apiary almost completely depopulated by it. A cure was effected by driving out or brushing off the combs all the bees of a hive, and knocking them down on a cloth at some distance from their stand. All that were not affected by the malady, rising on the wing, returned home; the rest were destroyed. This was repeated so long as there appeared to be any sign of it among them. Of course dry warm days must be chosen for the purpose.

Have you ever examined the combs of a hive so circumstanced? If not do so without delay. If you find, as we should not be at all surprised to hear, that the combs contain patches of abortive, dead or dried up brood, many of the cells having a small hole in their sealed covering, accompanied with a more or less offensive odor, you may at once conclude that your apiary has become infected with that terrible scourge, FOULBROOD. If this be the case, you can hardly hope to effect its eradication, unless you make up your mind to destroy every stock, burying the bees and burning the combs. Taking every possible precaution to prevent the bees of your other hives gaining access to any of the honey. Scald out and well scrape out your hives, saturating them, inside and out, with a very strong solution of chloride of lime. If the hives are not used again for a year or two, all the better. We know an instance where, last year, nearly twenty hives died or were destroyed, in consequence of Foulbrood.

When you have examined your stocks report the result, and we shall then be better able to advise you as to the best means of affecting a cure.]

March 21, 1868.

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### DISEASE AMONG BEES.

Within a few days after the publication of the letter of your correspondent, R. Mower, giving an account of a peculiar disease which has for some four years caused considerable havoc among his hives, I have had the opportunity of witnessing, in a friend's apiary, an instance of what I consider to be the identical malady described by Mr. Mower so graphically. My attention was drawn to one hive in a garden containing perhaps twenty stocks, all with this exception being perfectly healthy and prosperous. Bees, dark colored and more or less distended or swollen, had crawled out of the entrance and lay dead or dying on the alighting board or on the ground below. The box was lifted off the floor-board, which was removed, and a clean board substituted. There were lying on it many—perhaps fifty—dead bees, all presenting the appearance so peculiar to this disease. The owner had followed this course of proceeding every day for a considerable time, always finding a fresh batch of dead or dying.

As far as I could judge, the bees had not been affected with that type of disease generally known as "dysentery." The floor-boards, as they were removed each day, exhibited little or no sign of the noisome excretion voided by bees suffering from dysentery. Should the plan hitherto followed fail in restoring health to the bees of this hive, my friend intends to secure the person of the queen, and establish her at the head of another colony, and destroy all the remaining bees.

If the plan recommended in your reply to R. Mower, be adopted, it should be borne in mind that the queen must, if possible, be captured and replaced in the hive standing in the accustomed position, prior to the knocking out of the bees on the ground. This, though very easily accomplished with movable frame hives, is a much more difficult process with ordinary hives. If the operator shall fail in his attempt to capture the queen, he must carefully renew his search, when the bees are shaken or brushed out on the cloth. I may add that my friend's apiary has on a former occation suffered considerably from this disease, and that he does not believe that the infection is carried from one hive to another. The opportunity of observation I have had with regard to it, will not allow my giving any decided opinion on that point at the present moment. I hardly think from the description given by R. Mower, that the malady which has affected his stocks can be attributed to foulbrood, as under such circumstances the adult bees do not seem to be in any wise the worse for its presence in their hive, the destruction of which is simply owing to there being an insufficient number of bees matured to supply the loss of life from natural causes.

S. BEVAN FOX.

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The eggs from which workers and queens are developed, are perfectly identical. This has become an axiom in the theory of bee-culture. Nor could it be otherwise, for then it would be impossible to rear queens from worker eggs, as is done frequently every summer. and of which any one may readily assure himself, by inserting a piece of worker comb containing eggs and larva in a queenless colony.—SCHOLTISZ.

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A bee, if undisturbed after stinging, but left entirely to its own instinct, will endeavor to extract the sting by whirling around rapidly, and usually succeeds in getting away uninjured.

[For the American Bee Journal ]

## Reproduction of Bees, &c.

Referring to the somewhat incoherent theory advanced in the February number of the BEE JOURNAL, page 144, permit me to submit my humble opinion in regard to the procreation of bees.

I believe, with Dzierzon, that all the eggs contained in the ovaries of the queen are male (drones), and that their eggs are changed to female (workers) by their contact with the drone sperm, and that alone suffices. The Supreme Orderer is the greatest economist of means, and no one will find Him using two ways, where one can suffice.

The new theory assumes that in order to become queens, the larvæ need to eat some worker eggs; and that the workers dose the incipient queen with worker eggs, and thus impregnate the larva, immediately on its disclosure from the egg, with the spermatozoids present in those eggs. Moreover, these two facts are assumed, as corollaries, namely, 1st—If worker larvæ have received some royal jelly, they become capable of laying drone eggs; and, 2nd—That Dr. Dönhoff has succeeded, by artificial impregnation, in rearing a worker bee from a drone egg.*

Let us examine these propositions.

I had last season some black swarms. These I deprived weekly of the drone comb they constructed, in order to prevent intermixture with my Italian queens. At the same time these swarms had to supply me with the workers required for my nuclei. They consequently remained weak, and none of them had the least disposition to build queen cells. Yet, each time that my nuclei were made queenless, or became simply broodless, even without hatching queens, drone eggs were deposited by worker bees. This continued from May to September. Again, in July, I found one of these black swarms without eggs or queen, but with drone eggs in queen cells, desposited by a fertile worker. Whence, then, came the royal-jelly-partaking worker bees?

Now, let us turn to the second proposition. After the bridal tour, the queen's seminal receptacle is full. At the instant when the eggs glide through the oviduct, it is either on the Wagner or the Bickford theory, or some other yet unknown, brought in contact with the orifice of the seminal receptacle, and one or more spermatozoids slides on the egg. But how is the sex changed? Here we must still content ourselves with mere conjectures. I submit mine.

The eggs in the ovaries contain the germ of one or more drones. But these germs are so slightly developed, that they are not perceptible by our best microscopes. On the other hand, the spermatozoids contained in fecundated or worker eggs, being more developed, are visible as soon as deposited. According to the law that the time required for perfecting bees, is five days for the workers, and ten days for the queens, shorter than for the drones, one of the spermatozoids grows faster than the drone-germ, absorbs it and fills its place. The germ or germs, unaltered by digestion, as the new theory supposes, remains in the new-born individuals, ready and multiplying for future generations, if placed in favorable circumstances, and so on. Consequently, if you can artificially put a newly deposited drone egg in contact with some drone spermatozoids, as did Mr. Donhoff, (a very difficult operation, indeed), you can change the sex of that egg. Yet, if the operation is delayed, the drone germ being more developed, the two male and female spermatozoids, combining together, become hermaphrodite, as suggested by Mr. Oldt, in the February number of the BEE JOURNAL, page 151.

Prof. Varro concludes the article referred to, by saying "Please, Brother Grimm, don't ask me to exchange one of my Langstroth queens for a pure Italian just imported." Why thus? Did Prof. Varro think that Mr. Grimm's imported queens are less pure than those of Mr. Langstroth? Yet, in his article on page 20 of the JOURNAL, Vol. 3, he avowed himself to be the owner of *Swiss* imported bees, producing queens and workers so exactly like those produced by his Langstroth queens, that a good judge might readily mistake one for the other.

Have the Langstroth bees more impeccability of temper? Yet, in the same article, Prof. Varro made no distinction, in that respect, between his imported and his Langstroth bees.

Is it the color? Allow me a digression. Ten or twelve years ago, wishing to replace by imported queens the Italian bees I had from Mr. Debeauvoys, I received at the same time two invoices—the one from Italian Swiss, the other from Lombardy. On their arrival, the latter were so light in color, comparatively, that I believed them purer than the former. But some months after, there was no longer any perceptible difference between them, in this respect. I then thought that the climate had an influence on their color; but subsequent observation led me to doubt the correctness of that conclusion.

Doubtless the weather can produce some effect on the color. But, to my knowledge, the *color of the honey consumed in rearing brood*, produces more effect on the color of the bees than the climate or the season. Here, last year, the month of May was unusually wet. A queen raised by me in that month, exclusively on stored buckwheat honey, was very dark colored. Another, partly raised on newly gathered honey, was sensibly lighter. Yet, my darker queen became so handsome, the following summer, that were I not sure she is the same, I should believe her changed.

Moreover, *the color of the honey sac placed in the abdomen influences the shading of the transparent rings.* In the buckwheat season, bees grow daily darker. Everybody can verify the accuracy of this statement. It, is owing to the *difference in the contents of the honey sac*, that two queens of the same race or variety are rarely alike. Let some one gorge a portion of his bees with colorless sugar water, and another portion with dark-colored honey, and the exper-

*Dr. Donhoff so stated, in on of his earlier "*Contributions to Bee-Culture*," published in the *Bienenzeitung*, but subsequently admitted that he may have been, and probably was, under an erroneous impression.—ED.

iment will satisfy him as to the value of color, so little fixed in Italian bees.

Instead of discouraging those who, like Mr. Grimm, try to introduce imported queens by the hundred, their efforts should be applauded and encouraged. The people of this country will, for many years to come, have to rely on Italy for the improvement of their bees. A great change and simplification in the process of importation is very desirable, so that the cost of imported queens might be much diminished, and a saving effected for the country.

I have undertaken, in concert with two queen-breeders in Italy, a series of experiments in that line. The arrangements made lead me to hope that two consignments may arrive in May, and reach me in good condition. If any of your readers wishing to obtain imported queens, would unite with me in ordering more extensive consignments, the advantage of such an arrangement could be more fully and conclusively tested.

In any event, I will give your readers the result of my trial. CHARLES DADANT.

HAMILTON, ILL., Feb. 14th.

[For the American Bee Journal.]

## Bees in Missouri.

MR. EDITOR:—I have never met with any periodical which interests me as much as does the AMERICAN BEE JOURNAL. I take three political newspapers, some medical journals, the *American Agriculturist*, and the BEE JOURNAL; but none of these interest me as the latter does. I am very desirous of your welfare, and wish you great success in your undertaking to improve the bee-keeping public. Few men in this section of the country are at all acquainted with the habits of the honey-bee. I wish you may obtain many subscribers in these parts.

I beg to dissent from the late Prof. Varro's theory. I think the "fragmental dash" of his pen dashed his mind in the wrong direction—perhaps into the wrong hive of bees, where the queen was unusually prolific. Further observation will show that his views are erroneous, and his theory will fall to the ground unheeded. If I had never raised a queen bee, and knew nothing about it, he might possibly have made a proselyte of me. But I have raised as fine-looking and as good and prolific queens as I ever saw, in small nucleus hives, where there were no eggs from which to prepare the "royal peptone." Hence there was nothing from which to derive the "fragmental dash." Still, the theory may lead others to investigate, and good may result from it in the end.

Without detaining you longer on this subject, I wish to tell you how very prolific our bees are in Missouri. One of my neighbors found some bees at work in a small tree, which he cut off above and below the bees, and carried it home, setting or standing it by a tree in his yard. They worked well and produced five swarms from the parent stock. Some of the first swarms sent forth five more, making ten in all—the increase from one swarm in a single season. JOHN L. GREGG.

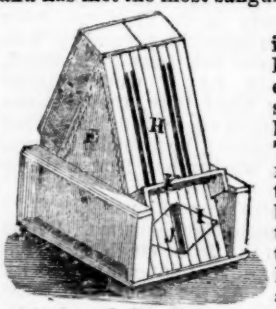
HOLDEN, MO.

[For the American Bee Journal.]

## Bingham's Triangular Hive.

Mr. S. B. Replogel, in the May number of the JOURNAL, wants a frame hive with boxes as near the brood as the Langstroth form admits them; and that, while it shall not have more than eight frames, it shall contain honey enough, all above the bees, for their support in winter and yet not cost more than two dollars.

Herewith I send a cut of Bingham's Triangular hive, with four six-pound boxes in position on one side—as the shortest explanation of the hive he needs. The outside case is a square box, having a lid for a cover, and not shown in the engraving. This hive has all he requires, and much more than most bee-keepers suppose possible in a hive. It has the advantage of having been thoroughly tested for three years, and has met the most sanguine expectations.




It has seven frames in the form of the letter A, and accomodates eight shallow six-pound boxes at one time. They are not only nearer to the brood than the Langstroth boxes, but so situated that the bees fill them simultaneously with the hive, and yet never deposit brood in them, even if put on at the moment of hiving in one or two large swarms. The outside case (not shown) covers the boxes in summer, and holds the chaff or shavings with which the triangular part, containing the honey and bees, is packed in winter. No frost or dampness ever forms in the hive, or on the combs above the bees. The combs never fall or crack from either heat or cold, and are made *straight* with *winter passages* through them with absolute certainty. The heat generated by the bees is all concentrated in the small top of the hive, where all the honey is stored on seven frames.

Much has been written about upward ventilation, and no one seems to understand why doctors disagree. In my improved Langstroth hives I never use upward ventilation; neither do I in my Triangular hives. Yet for five years I have wintered from forty to eighty stocks in them, in the open air, in western New York; and I know that upward ventilation is worse than useless in any hives in which no frost or dampness forms. Who ever heard or even thought of upward ventilation in the old fashioned straw hive, where all the honey was in one small place, where the heat of the bees was concentrated and maintained by the thick straw walls of the hive? The great cry about water for bees finds an answer in the above question. In my hives no water forms at any season of the year; yet I have tried all sorts of plans to get the bees to take water, and have never succeeded unless the water was thoroughly sweetened. T. F. BINGHAM.

OBERLIN, OHIO.

[From the Maine Farmer.]

## Some Items for Bee-Keepers.

Judging from the letters and queries we have received, the late discussion on Bee-Keeping before the Maine Board of Agriculture, and the formation of a State Bee-Keepers' Association, has awakened much interest in the fascinating pursuit of bee-culture, which we hope will be largely increased throughout our State, through the instrumentality of this organization. The Association is now engaged in preparing a circular of inquiries embracing all points of interest connected with the management of bees, which will be sent to all bee-keepers in our State whose address is known, for the purpose of soliciting information to be incorporated into an annual report. This circular will probably be sent out in the course of a few weeks, and we earnestly bespeak for it the consideration of all bee-keepers.

Mr. Geo. W. Blanchard, of West Gardiner, one of the most intelligent and enthusiastic apiarians in the State, communicates to the last number of the AMERICAN BEE JOURNAL, his report of the past season's operations in this business, which we take pleasure in transferring to our columns. He says: "The past season has been a very good one for honey, though producing few swarms. I have taken 596 pounds of honey from seven hives of black bees. My practice has been to feed sparingly in the spring to promote brooding. I use Kidder's double hive. I have transferred black bees and introduced the Italian queen at the time of transfer, with perfect success." We should be glad to have other bee-keepers send us similar reports of their management and success.

Bee-keeping is a pursuit in which women have engaged with much zest, and in which many have achieved great success. The name of Mrs. Ellen S. Tupper, (a Maine woman by the way), is one that is probably well-known by all our bee-keeping friends, and her case is an instance of rare success won in a pursuit in which women seldom engage, but which is decidedly appropriate for them. The quick observation and gentle handling necessary to success in the business are the peculiar gifts of women, and there is no part of the business that may not be appropriately performed by them. The apiary of Mrs. Tupper, at Brighton, Iowa, is one of the largest in the country, and her article on Bee-Keeping, in the Report of the U. S. Agricultural Department, for 1865, is one of the best we have ever read. In concluding her article by recommending the business to women, she says: "It has proved to me of great benefit. I came west twelve years ago, under sentence of speedy death from one of New England's best physicians, yet now rejoice in perfect health restored. More than to all other causes I attribute the change to the interesting occupation which has kept me so much of the time in the open air and *paid me for being there.* I most heartily recommend it to others, who are seeking either health or a pleasant and profitable employment."

We have recently had the pleasure of examining the American Side-opening Hive, patented by H. A. King & Bro., Nevada, Ohio, which is being introduced into this State by Mr. C. Paine, of Charleston. It is a movable comb hive, and it is so constructed that one entire side can be removed whenever it is necessary to brush out the litter either in winter or early spring, or when new swarms are hived. It is also so constructed that no air space is allowed between the frames and honey boxes, and this air space in some other hives is not an advantage but in fact otherwise, as it causes a great waste of heat. Boxes are put on to receive the surplus honey. The ventilation of the hive is very perfectly obtained.

The operation of transferring bees from the common hive to a movable frame hive is a matter not so difficult of performance as one would seem to infer from the description given of the same. It requires a steady hand and some pluck, but we were most agreeably surprised the other day on being told by one of our subscribers, whose wife is a practical bee-keeper, that she has often performed the job with good success, besides doing all other work necessary about an apiary of considerable size. We hope that like Mrs. Tupper, of Iowa, she may make her fortune by the business. It gives us pleasure to record such instances of woman's success out of the ordinary course of her daily duties. If more of it were practiced women would have better health and more happiness.

If a person want to know all that is necessary about bees and their management, without reading too much secondary matter, we would recommend to them a little work by H. A. King & Bro., called the "Bee-Keeper's Text Book," which is sold by Mr. C. Paine, of Charleston, in this State. Although written in favor of a certain hive, yet it contains an abundance of reliable information, and plain, simple directions for all bee-keepers. It is a work we have before commended, and is well worth the price, 50 cents in paper covers, 75 in cloth.

Mr. R. D. Paul, of Farmington Falls, communicates his success in artificial swarming or dividing. He writes: "I had one hundred and thirty colonies in 1867, and no natural swarming was allowed, with one exception, which was the fifth swarm from one. It was a native swarm. In April I introduced an Italian queen, and divided them three times, making four swarms. One of these sent out a swarm Aug. 10th, thus making five swarms of Italians from one native colony in five months. They all bid fair to winter well."

Some interested in bee-culture have expressed a wish to have a public exhibition at some central point in June next, at which bees and hives can be shown and an interchange of thought and opinion brought about. One of the most successful bee-keepers in the State writes us as follows: "Should an exhibition be held in June next, Mr. Paul and myself propose to show the method of transfer of bees, with the introduction of queens, and also a colony of Italian bees on one comb,—the frame of large size, in order that the queen can be seen by all who wish." We should like to hear from our readers who are bee-keepers upon this matter, and hope they will give us their views upon the desirability of such an

exhibition. If bee-keepers show sufficient interest, we have no doubt it will be held.

[For the American Bee Journal.]

## To Introduce Queens Safely.

MR. EDITOR:—I see by your JOURNAL that bee-keepers still use the wire cage for introducing queens in deprived colonies. I have a better plan, which may be of benefit to those who are in the bee business, saving time and avoiding risk. It is as follows:

Dissolve four ounces of sugar in one pint of water, and add one ounce of essence of peppermint. Take out your frames, and sprinkle the bees well all over with the solution. Then replace the frames, and put in your queen, and the bees will not disturb her.

I introduce all my queens in this manner, and have not lost one yet. H. FAUL.

COUNCIL BLUFFS, IOWA.

[For the American Bee Journal.]

## Bee-Feeder.

The following was suggested after reading the last number of the BEE JOURNAL.

A simple, safe, and cheap bee-feeder for the Langstroth hive is made of a Lyman self-sealing fruit jar, or other pattern jar, with suitable top. The principle is to have a vacuum and no vent on top; thus you may tap it like a barrel of cider, but unless you give it vent nothing will run out.

Punch holes in the tin top of such a jar, close together about the centre, and then solder a piece of the finest wove wire,* such as is used on milk strainers, over the holes. Fill the jar full of liquid honey or sugar syrup made of about the same consistence; press on or screw on the cover, according to the kind of jar used, perfectly air-tight; then turn over quickly bottom up, and nothing will run out, only as the bees suck it through the wove wire. In use, place it over the hole in the honey board, over the cluster of bees. Water can also be given to the bees in the same manner.

This bee-feeder was suggested by bird water-glasses and ink-stands that I saw east. I have used nine during the last six weeks with good success.

Referring to the article "CRITICISM," on page 188 of the April number of the BEE JOURNAL, and "how to make all swarms equally prosperous," I would like our bee-keeping friends to answer, through the JOURNAL, whether they have ever tried the experiment of removing the queen of a stock not up to time, and giving them a sealed or young queen, or brood from a prosperous colony, from which to raise one—and the effect it had on the unthrifty colony?

JOHN M. PRICE.

BUFFALO GROVE, IOWA.

*Wove wire, if of brass, would be apt to generate verdigris if not carefully attended to, and produce foulbrood in the colony It would be well, therefore, to employ some substitute not liable to this objection.—ED.

[For the American Bee Journal.]

## Artificial Natural Swarming.

Opening one of my hives sometime ago, and lifting out a frame, I saw the queen among the crowd of workers, and distinctly heard her *piping*—which she continued to do while I held the frame in my hand. Concluding from this that there was another queen in the hive, I proceeded to search, and found a closed queen cell on one of the combs, so placed that its apex nearly touched the lower cross-piece of the frame, thereby preventing the enclosed queen from emerging in the usual manner. On cutting open the cell I found a perfectly mature queen in it, which I seized and confined in a cage. Returning the frames, I replaced the honey-board and removed the tin cover from one of the holes; on this I laid the cage, set a glass tumbler over it, and shut the hive. I intended to take away the caged queen after examining some other colonies; but in a few minutes a swarm hurriedly issued from this hive, and settled on a tree close by. Supposing the old queen had accompanied the swarm, I inconsiderately liberated the young one, and let her enter the hive. I had scarcely done so, when the swarm returned, as hurriedly as it had left, and re-entered the hive. I had not leisure then to re-examine the hive, but on doing so next day, found the colony queenless. Doubtless the old queen remaining at home had unexpectedly encountered her rival, and the very rare case happened that both were killed in the deadly fray.

This colony was not populous and could scarcely have contemplated swarming; the purpose of raising a young queen being, most probably, to supercede the rather unprolific old one.

But can swarming be incited by introducing a caged queen in a colony, or placing one thus over a hole in the honey-board? If so, might we not manage to relieve ourselves of the trouble of *driving* out swarms, by properly availing ourselves of this circumstance? In driving we are not always successful in securing the queen; and it would seem that in this case she lagged behind. Yet any difficulty from that cause could easily be overcome by means of the reserve queen confined in the cage, which could be given to either stock, as circumstances might require. But the first matter is to ascertain whether such process will produce a swarm.

J. POUNSFORT.

MICHIGAN.

☞ Perfect queens are occasionally so small that it is difficult to distinguish them from workers; and very expert practical apiarians have sometimes been unable to find the queen in a hive where healthy worker brood was regularly produced, and which consequently must have had a normal queen.

Why on earth do people think it fine to be idle and useless? Fancy a drone superciliously desiring a working bee to stand aside, and saying—"out of my way, you miserable drudge; *I* never made a drop of honey in all my life."—*Country Parson.*

# THE AMERICAN BEE JOURNAL.

WASHINGTON, JULY, 1868.

☞ THE AMERICAN BEE JOURNAL is now published monthly, in the City of Washington, (D. C.,) at $2 per annum in advance. All communications should be addressed to the Editor, at that place.


## Our New Volume.

With this number we commence the fourth volume of the AMERICAN BEE JOURNAL. A constantly growing subscription list induces us to continue the publication, in the expectation that it will ere long secure the support indispensable for permanent success. Almost every mail brings us flattering letters of encouragement and strengthens our hands with the material aid without which it is impossible to sustain a periodical devoted to a specialty. Still the accessions to our list are not as numerous as they should be, to enable us to prosecute the undertaking with ease and cheerfulness. It is true, the JOURNAL now circulates in nearly all the States and territories of the Union, and in the British provinces. But it should reach every county and township in all this wide extent of country; for bee-culture can be profitably conducted almost everywhere, and bee-keepers whom the paper would interest and benefit dwell in all these borders. Will not the numerous fast friends of the JOURNAL aid us in endeavoring to reach these and securing their support, by presenting, in their respective neighborhoods, the claims of a publication which we know they prize and "would not willingly let die."

This being a busy season with practical bee-keepers, when few of them have leisure to write, we have taken the opportunity to withdraw from our files and insert this month, a number of articles long deferred, but by no means neglected or forgotten. Others still remain, most of which we expect to be able to present in our next issue.

The June number of the "*American Naturalist*" contains the most complete account of the parasites of the honey bee to be found anywhere in the English language. The article is from the pen of Dr. Packard, one of the editors, and should be read by every bee-keeper who desires to acquire a satisfactory knowledge of the numerous insect enemies to whose attacks the bee is exposed in every stage of its existence. The chief of these foes are minute ichneumon-flies and beetles, or their larvæ, most of which are figured on an enlarged scale on the two plates which accompany and illustrate the article. The subject, of course, is not exhausted, as hardly any branch or subdivision of natural science is ever likely to be; and the writer, in the concluding paragraph, says he "would be greatly obliged for material to aid him in the study of our bees and wasps; would take pleasure in corresponding with those interested in the study of their habits; and would be very grateful for specimens of the young in alcohol, their parasites and nests."

The *American Naturalist* is published monthly, at Salem, (Mass.,) by the Peabody Academy of Science, at three dollars a year. It is handsomely illustrated, and may truly claim to be "a popular magazine of natural history," deserving as such a liberal patronage and extensive circulation.

Mr. Harrison, of Frederick, Md., has sent us a sample of his "Nucleus Bee-Feeder," a modification of the Bee-Feeder noticed in a previous number of the JOURNAL. It is a neat and convenient article, and will doubtless be useful to those who are raising queens in nucleus hives.

☞ We are now in receipt of several additional German periodicals devoted to practical bee-culture, which, with the favors of our numerous correspondents, will enable us to impart increased value and interest to the pages of the BEE JOURNAL.

## Correspondence of the Bee Journal.

TOMPKINS, (MICH.,) Feb. 28.

I learned with regret the death of Prof. Varro. Although I could not endorse all his opinions, I read his articles in the JOURNAL with a great deal of interest and pleasure, and think they will be missed very much in future by its numerous readers.

Very many of us take a deep interest in the success of the AMERICAN BEE JOURNAL. Other papers are often received, glanced at and thrown aside; but the JOURNAL is always a welcome visitor, and the business must be very urgent that prevents a perusal of its pages as soon as it is received. From every number we obtain some valuable information. We also become acquainted with its numerous contributors, scattered over a large portion of the country. By reading these writings, we form an opinion as to their character, and *imagine* their personal appearance. In their monthly visits, we learn

to regard them as friends, as brothers, as members of the same family, embarked in the same business, engaged in the same interesting study —that of the honey bee, its habits, and its natural history; and when one of the number is removed from us, the loss is *felt*. The Professor was sometimes severe in his criticisms, but his exposures of parties engaged in swindling a credulous bee-keeping public, were just. There are one or two articles in late numbers of the JOURNAL, which may be regarded as open to severe criticism, and I had hoped to see them handled by him, as he alone was capable of handling them.

J. H. TOWNLEY.

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BROOKLIN, CANADA, March 9.

I was much surprised to hear of the death of Prof. Varro. It is to be much regretted. Though he might by some be considered ultra in his opinions on bee-culture, yet he was a learned and spirited writer. With a style peculiarly his own, he "laid out" his antagonists with "rare wit." His contributions to the BEE JOURNAL, though at times somewhat ambiguous, were of much value. Doubtless the readers of the JOURNAL will feel his loss.

J. H. THOMAS.

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[For the American Bee Journal.]

## The Egyptian Bee.

Having recently received a file of the back numbers of the "AMERICAN BEE JOURNAL," I find an inquiry from L. L. Fairchild, on page 173 of Vol. II, respecting the comparative fertility of queen bees of *apis fasciata* and the honey-storing capacity of the workers. As no reply appears to have been made to this question, I may state that the Egyptian queens are decidedly smaller than those of the Italian or the black bee, and in my opinion inferior to either in point of fecundity. The workers also, being smaller, cannot carry such large loads, and have not therefore the honey-storing power of either of the other species named. With regard to their extreme irascibility it may be perceived, by referring to page 164 of the same volume, that I distributed my remaining Egyptians among four British apiarians, three of whom made public their experience,* (which fully confirmed my evidence as to the ferocity of these bees, whilst the fourth, Mr. George Fox, whose letter alone found admission into the "AMERICAN BEE JOURNAL," happens to be one of those fortunate individuals whom bees never appear to sting under any circumstances, and who may therefore well be able to manipulate even the savage Egyptians with impunity.

T. W. WOODBURY.
("A Devonshire Bee-Keeper.")

MOUNT RADFORD, EXETER, ENGLAND, 30th April, 1868.

*☞ We presume that the experience of the other three British apiarians, to whom Mr. Woodbury consigned Egyptian bees, was published in some numbers of the *Journal of Horticulture*, or other London periodical, which did not reach us, as we had no previous knowledge that any such accounts had appeared. The German periodicals, which reach us more regularly, furnish no additional information respecting those bees—the Carniolian variety of the common black bee exciting more interest at present among bee-keepers; though, so far, its disposition to swarm frequently, and thus multiply rapidly, seems to be the only traits that are urged in its commendation.

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## Bees and Fruit.

The following letters respecting the alleged damage done to fruit by honey bees, were sent to us for publication by Mr. Gould, of Wenham, Mass., months ago, and should have appeared sooner, but for our limited space and the crowded state of our columns. The first is from the eminent botanist, Asa Gray, Professor of Natural History in Harvard University; and the second from Dr. H. A. Hagen, late of Konigsberg, Prussia, but now of Cambridge, Mass., a learned and distinguished German entomologist, who has paid especial attention to collecting and making a list of all the works and papers relating to bee-culture. Prof. GRAY writes—

"HARVARD UNIVERSITY, Feb. 17, 1868.

I thoroughly endorse the correctness of Dr. Packard's statement. There is no doubt that the sole use and object of honey in blossoms is to attract insects, so that they may in their visits carry pollen from the stamens of one flower to the stigma of another, and in that way *insure the formation of the fruit*. I have no idea that the honey after being secreted by the plant into the open flower, is ever taken up again by it; so that the plant loses nothing it could ever use by the bees carrying off the honey."

Dr HAGEN says—

"I have never known and find nothing in the literature of bee-keeping now at my hand, to prove that bees are obnoxious to fruit and to fields. I think it is possibly a mistake, for other hymenoptera, *i. e.* that other insects of the group (hymenoptera) to which bees belong, may do the alleged injury."

We have not heard whether the venom of the Wenhamites culminated in the actual banishment of Mr. Gould's bees or evaporated in the vote of the town meeting.

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[For the American Bee Journal.]

## "Mathematics" of the Honey Bee.

MR. EDITOR:— I have not received my JOURNAL for last month, and would rather lose one number of all my other papers (some five or six) than the BEE JOURNAL for any month.

I cut the subjoined from the New York Tri-Weekly *Tribune*. It is from a notice of a work lately written by Mrs. Agassiz and her husband, the Professor.

"The following agreeable bit of natural history will be read with interest, for the curious process of insect architecture which it explains, as well as for the light it throws on the much vaunted "mathematics of the bee" in the construction of its cell.

"For some time Mr. Agassiz has been trying to get living specimens of the insect so injurious to the coffee tree; the larva of a little moth akin to those which destroy the vineyards in Europe. Yesterday he succeeded in obtaining some, and among them one just spinning his cocoon on the leaf. We watched him for a long time with the lens as he wove his filmy tent. He had arched the thread upward in the centre, so as to leave a little hollow space into which he could withdraw; this tiny vault seemed to be completed at the moment we saw him, and he was drawing threads forward and fastening them at a short distance beyond, thus lashing his house to the leaf as it were. The exquisite accuracy of the work was amazing. He was spinning the thread with his mouth, and with every new stitch he turned his body backward, attached his thread to the same spot, then drew it forward and fastened it exactly on a line with the last, with a precision and rapidity that machinery could hardly imitate. It is a curious question how far this perfection of workmanship in many of the lower animals is simply identical with their organization, and therefore to be considered a function, as inevitable in its action as digestion or respiration, rather than an instinct. In this case the body of the little animal was his measure; it was amazing to see him lay down his threads with such accuracy, till one remembered that he could not make them longer or shorter; for, starting from the center of his house, and stretching his body its full length, they must always reach the same point. *The same is true of the so-called wathematics of the bee. The bees stand as close as they can together in their hive for economy of space, and each one deposits his wax around him, his own form and size being the mould for the cells, the regularity of which when completed excites so much wonder and admiration. The mathematical secret of the bee is to be found in his structure, not in his instinct.* But in the industrial work of some of the lower animals, the ant for instance, there is a power of adaptation which is not susceptible of the same explanation. Their social organization, too intelligent, it seems, to be the work of any reasoning powers of their own, yet does not appear to be directly connected with their structure. While we were watching our little insect, a breath stirred the leaf and he instantly contracted himself and drew back under his roof; but presently came out again and returned to his work.'"

Now, while the learned Professor and his lady, and the writer of this notice, are thus throwing stones at the mathematical ability of our little pets, I should think Huber would move in his coffin and his sightless orbs shed tears of vexation; Langstroth feel a pang not caused by his disease; and Quinby say, the lady's bees may make cells in that way, but mine do not! When you give this to your readers, how many among them will believe it? The tame mink man is the only one who could make me receive it. If he endorses her views, I shall of course have to *cave*.

It is rather late in the day for the "high learned" and scientific to send forth a work promulgating such views. The idea that bees, in comb-building "stand as close as they can together," each making "his own form and size the mould for the cells," must have been concocted in the study, for it certainly could not have been derived from observation. The erudite reviewer, too, is to be congratulated on the light he has thus felicitously obtained on the "mathematics of the bee." Much "wonder," unquestionably, but very little "admiration" indeed, is excited, when one meets with such delectable specimens of analogical reasoning, the erroneousness of which ordinary eyesight well employed, without the aid of a "lens," would detect at a glance.

B. F. BABCOCK.

AFTON, MINN.

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[From the St. Charles (Mo.) Cosmos and Sentinel.]

## The Battle of the Bees.

On Saturday of last week a terrific apiarian conflict took place at the Rev. W. H. Vardeman's, in Cuivre township, in this (St. Charles) county. It is not known what number of combatants were engaged in the fight, but their name is Legion.

Mr. Vardeman had nine stands upon a single bench or platform, and the conflict began between the inmates of two stands that were separated from each other by several intermediate hives. At first only a few of each garrison were engaged in the conflict, but as the fight progressed and the fray waged fast and furious. not only the fighting materials of the belligerent garrisons, but also that of the neighboring stands, were drawn into the conflict. It is supposed by those who witnessed the fight, that all the war material of the several garrisons was put in requisition, and it is even hinted that several of the fair queens unsexed themselves, and by their presence gave aid and countenance to their respective favorites. Certain it is, there were but few "sympathizers" who did not take part in this battle.

The fight is represented as the most furious one of the kind on record. The great captains of the day deported themselves with great valor and intrepidity, and carried on exterminating war, until the number became so great that the air was fairly blackened with the bees. The fight continued for nearly two hours, until one party seemed to give way and the combat slackened. Hundreds of bees perished in the fight, and hundreds of others were wounded in the fray and died from their wounds afterwards. It was not till the going down of the sun that the cries of the wounded and the shouts of the victors ceased, and order was once more restored. The ground in the vicinity was literally covered with the wounded and dying.

The origin of the fight is unknown. Whether it was some old feud, handed down from sire to son, between some ancient houses of York and Lancaster in the Bee Kingdom, or provoked by some raiding band of bushwhackers, who desired to appropriate the golden fruits of others' labor to their own use; or whether some "ladye fayre"—some Helen Apis—was in the case, is not recorded.

[For the American Bee Journal.]

## Do Queens Mate with two Drones?

It has occurred to me that queens sometimes mate with two drones, from the fact that I have frequently had Italian queens whose progeny, when they first commenced depositing eggs, appeared almost pure, and after a few weeks would change almost entirely to black; and, again, after some weeks, or sometimes months, the progeny would change back again.

This changing I have noticed both with the Italian and black queens in half a dozen or more cases, within the past four years.

While examining a small nucleus last season, I saw the queen had just returned from her bridal tour, showing the usual signs of having mated with a drone. The next day I opened the nucleus to ascertain, if possible, how long before she would commence depositing her eggs, (as some writers profess to tell us the time), and to my surprise she was not *in*. I am sure she was not, for she was a large well colored Italian, and the bees in the nucleus were few in number and of the black race. I could therefore easily have found her, but she was not *in*.

I opened and looked again in a short time, and saw her bearing fresh signs of having met with a drone or drones. Two days after this she was depositing eggs, which produced black bees for some weeks; and afterwards others, as bright almost as pure bred bees, proceeded from the eggs she laid. This spring the progeny is black again; though a great majority of the bees bear the shape, but not the stripes, of the Italian—while others having the shape of the common black bee, have one or two stripes or bands.

Did not this queen mate with two drones? or why the change in the color, markings, and shape, of her progeny?

If birds and animals will mate with two of the other sex, why may not insects also?

I wish your scientific readers would give this their attention, and devise some way that we may have our queens mate with the kind of drone we wish to breed from. Cannot we Americans do what a German has done? Let every reader of the JOURNAL try some experiments of his own this summer, and I feel sure we shall accomplish the much desired end.

H. NESBIT.

CYNTHIANA, KY.

[For the American Bee Journal.]

## Bees in Tennessee.

We have the finest bee country here in the world. White clover is becoming the spontaneous growth of our bottoms. Besides, we have an abundance of other bee pasturage, which lasts all the time that bees can be out.

We have no patent hives here yet, nor any Italian bees; and I hope to get some instructions in regard to both from your paper— of which send me the back numbers for the present year.

Forked Deer River Bottom, near where I live, abounds with wild bees. You cannot place honey out anywhere in it without its becoming in a few minutes covered with bees.

Will some of your experienced bee-men give me some instruction as to the best mode of hunting bees, and the best time to do it? I have heard a great deal about "coursing" bees, but I do not believe that one bee in a hundred will fly in a direct line for its hive, when leaving the bait. I have watched them, after circling for some time, start off in an apparently straight course for the hive; but they would then curve so much as to leave me in entire uncertainty as to the direction they went. Nor is there any indication of the elevation of the hive from the ground, by noticing the height to which the bees will rise, in circling, before leaving; as all bees, when passing through woods, homeward bound, will fly over the tops of the tallest timber.

I would be glad to hear from some of your correspondents on this subject.

S. W. COLE.

ANDREWS CHAPEL, TENN.

☞ In the February, March, and May numbers of the last volume of the BEE JOURNAL, our correspondent will probably find the information desired.

[For the American Bee Journal.]

MR. EDITOR:—Can you inform me what is a neutraliser or solvent of beeswax and propolis, to remove it from glass or cloth?*

Bees are in good condition here this spring, having been well supplied with honey last fall.

In the statements of your correspondents, boasting of the productiveness of their bees, I have not seen anything better than that of a colony I sold to a neighbor, which yielded him last season four swarms. The first swarm swarmed twice; and two of the casts swarmed also—making in all seven from one. Two of these went to the woods. The remaining five became strong and rich for winter. The old colony and the swarms yielded, besides, eighty pounds of surplus honey.

I have an Italian queen that was reared last fall. On the 12th of March she had only one inch of comb filled with eggs. On the 23d of April she produced drones, principally even in worker cells. The lower part of her abdomen is enlarged, so that although she is very intent on laying eggs, she only succeeds in getting one deposited after several efforts, and it is then placed at half the depth of the cell.

At this date she has ceased to produce any workers, and very rarely is a drone produced in the worker cells, while the eggs she is now laying in drone comb are developing uniformly. I gave fifteen dollars for her last fall. If you wish to experiment with her, I will freely send her to you. I think she must have dropsy, or an enlargement of the ovaries.

R. WILKIN.

CADIZ, OHIO, May 16, 1868.

*Propolis may be removed from glass by means of alcohol, and wax by a solution of potash. Cloth would probably be injured by the latter.